

SX™ SERIES

SIMPLY eXCEPTIONAL FILTER PROTECTION



PRODUCT INFORMATION

Global
LIGHTNING
Solutions

The **SX™** radio frequency DC-blocked filter protectors are ideal for RF coaxial applications where DC is not required. The **SX™** can be used on high-powered RF feeder lines in the range of 350 to 2,300 MHz, as well as, low-powered microwave sites at 2 to 10GHz. The **SX™** is available in a multitude of connector configurations each exhibiting low return loss, insertion loss and let through voltage.

PolyPhaser®
CORPORATION
GLOBAL LIGHTNING SOLUTIONS

BE PREPARED, BE PROTECTED.

Features

- n Ultra Compact, Patented Filter Design
- n Industry's Best RF Performance
- n Industry's Lowest Throughput Energy
- n Fully Weatherized Housing
- n Maintenance Free
- n DC Blocked RF Path
- n Ultra Wide Bandwidth
- n Multi-Strike Capable
- n No Gas Tubes to Replace
- n 10 Year Warranty

SX™, Simply eXceptional Filter Protection.

Simple

- n Bulkhead Mounting
- n Grounding Protection

eXceptional

- n Let through Energy
- n Insertion Loss
- n Value
- n VSWR



Part Number	Frequency (MHz)	Connector Surge	Connector Protected	Max Power (Watts) @ 20° C	Insertion Loss (dB)	Return Loss (dB)	Surge (Max)	Throughput Energy @2kA (nJ)	Drawing Number
USXL-MA	350 - 1200	N Male	N Fem	1000	<0.1	>26	20kA, 8x20µS	<10	**
USXL-D	350 - 1200	DIN Fem	DIN Fem	2000	<0.1	>26	25kA, 8x20µS	<10	4
USXL-D-MA	350 - 1200	DIN Male	DIN Fem	2000	<0.1	>26	25kA, 8x20µS	<10	5
DSXL	800-2300	N Fem	N Fem	500	<0.1	>26	20kA, 8x20µS	<10	1
DSXL-MA	800-2300	N Male	N Fem	500	<0.1	>26	20kA, 8x20µS	<10	2
DSXL-ME	800-2300	N Fem	N Male	500	<0.1	>26	20kA, 8x20µS	<10	3
DSXL-D	800-2300	DIN Fem	DIN Fem	750	<0.1	>26	30kA, 8x20µS	<10	4
DSXL-D-MA	800-2300	DIN Male	DIN Fem	750	<0.1	>26	30kA, 8x20µS	<10	5
DSXL-D-ME	800-2300	DIN Fem	DIN Male	750	<0.1	>26	30kA, 8x20µS	<10	6
DSXL-DN	800-2300	DIN Fem	N Fem	500	<0.1	>26	30kA, 8x20µS	<10	7
DSXL-DN-MA	800-2300	DIN Male	N Fem	500	<0.1	>26	30kA, 8x20µS	<10	8
DSXL-DN-ME	800-2300	DIN Fem	N Male	500	<0.1	>26	30kA, 8x20µS	<10	9
DSXL-NS	800-2300	N Fem	SMA Fem	300	<0.1	>26	20kA, 8x20µS	<10	10
DSXL-T-MA	800-2300	TNC Male	TNC Fem	300	<0.1	>26	18kA, 8x20µS	<10	11
DSXL-T-ME	800-2300	TNC Fem	TNC Male	300	<0.1	>26	18kA, 8x20µS	<10	12
DSXL-TS	800-2300	TNC	SMA Fem	300	<0.1	>26	18kA, 8x20µS	<10	13
PSXL	1200-2800	N Fem	N Fem	300	<0.1	>26	20kA, 8x20µS	<10	1
PSXL-MA	1200-2800	N Male	N Fem	300	<0.1	>26	20kA, 8x20µS	<10	2
PSXL-ME	1200-2800	N Fem	N Male	300	<0.1	>26	20kA, 8x20µS	<10	3
PSXL-D	1700-2800	DIN Fem	DIN Fem	750	<0.1	>26	30kA, 8x20µS	<10	4
PSXL-D-MA	1700-2800	DIN Male	DIN Fem	750	<0.1	>26	30kA, 8x20µS	<10	5
PSXL-D-ME	1700-2800	DIN Fem	DIN Male	750	<0.1	>26	30kA, 8x20µS	<10	6
LSXL	1800-3800, 4200-6000	N Fem	N Fem	10	<0.2	>20	20kA, 8x20µS	<10	14
LSXL-MA	1800-3800, 4200-6000	N Male	N Fem	10	<0.2	>20	20kA, 8x20µS	<10	15
LSXL-ME	1800-3800, 4200-6000	N Fem	N Male	10	<0.2	>20	20kA, 8x20µS	<10	16
AL-LSXM	2000 - 6000	N Fem	N Fem	10	<0.2	>20	10kA, 8x20µS	<10	14
AL-LSXM-MA	2000 - 6000	N Male	N Fem	10	<0.2	>20	10kA, 8x20µS	<10	15
AL-LSXM-ME	2000 - 6000	N Fem	N Male	10	<0.2	>20	10kA, 8x20µS	<10	16
AL-LSXM-NS	2000 - 6000	N Fem	SMA Fem	10	<0.2	>20	10kA, 8x20µS	<10	17
AL-LSXM-RT-ME	2000 - 6000	RP-TNC Fem	RP-TNC Male	10	<0.2	>20	10kA, 8x20µS	<10	18
WSXM	6000-10000	N Fem	N Fem	10	<0.2	>20	10kA, 8x20µS	<10	14

** Drawings subject to change. Go to www.polyphaser.com for the most up-to-date drawings.

OUR PHILOSOPHY

Our Philosophy has always been to manufacture surge protection that far surpasses our customer's expectations. The **SX™** is an example of this philosophy at work. The **SX™** is a patented DC blocked filter design that maintains the lowest surge let-through of any protector in our industry. The **SX™** outperforms all of the competition in terms of surge capacity, RF performance, durability, and reliability in the field. It is no wonder that the **SX™** has quickly become the standard to which all other lightning protection is compared. Call us at +1.775.782.2511 to protect your investment and to find out why we say that the **SX™** is Simply eXceptional.

Specs

Environmental

- n Fully Weatherized Housing Meets IEC 60529 IP65
- n Procedure 4.11, Wind Driven (120MPH)

- n Meets Bellcore #TA-NWT-00487
- n Rain Intrusion Test

Temperature

- n -40°C to +85°C Storage and Operating

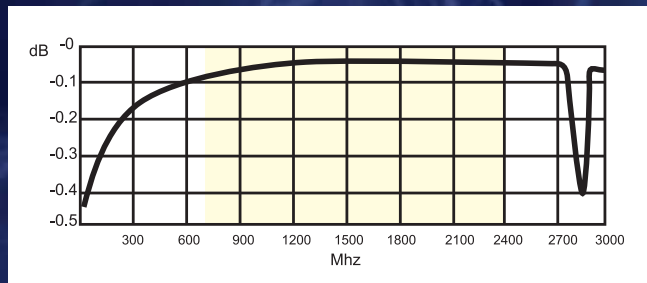
Vibration

- n 1G @ 5Hz to 100Hz

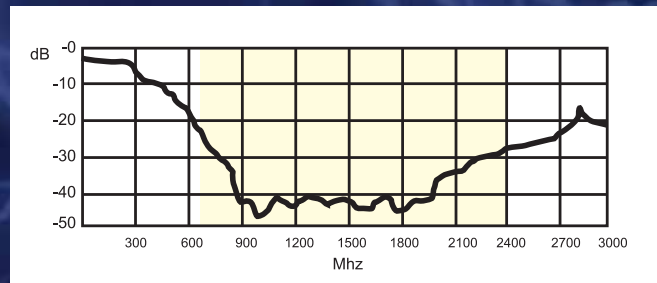
Humidity

- n 0 to 100% Condensing

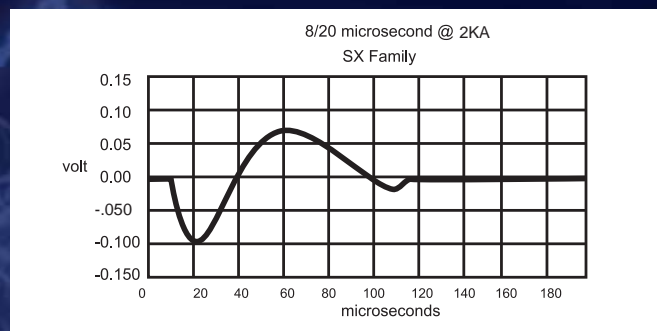
TYPICAL INSERTION LOSS



TYPICAL RETURN LOSS



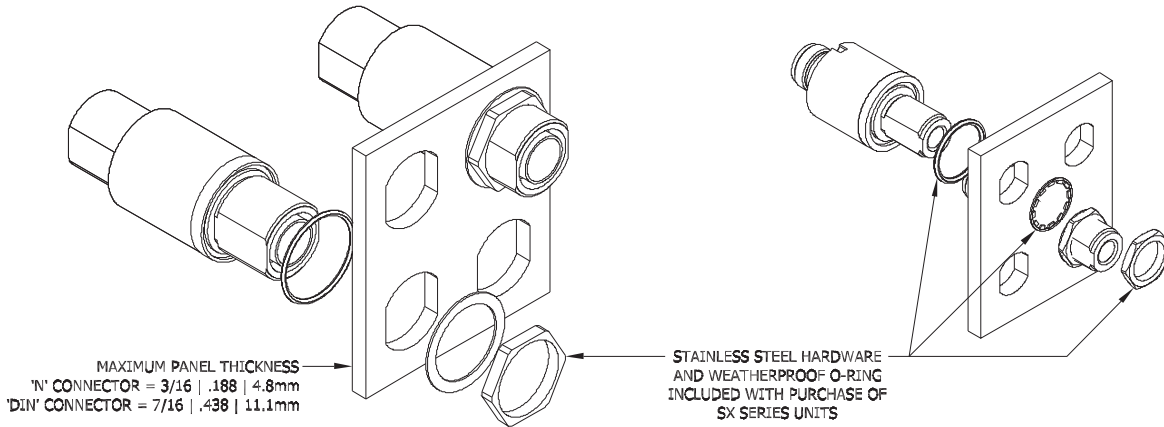
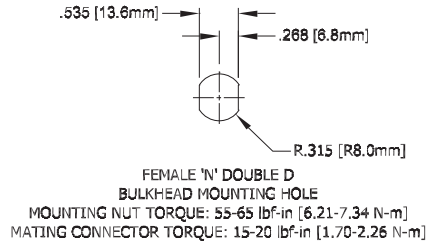
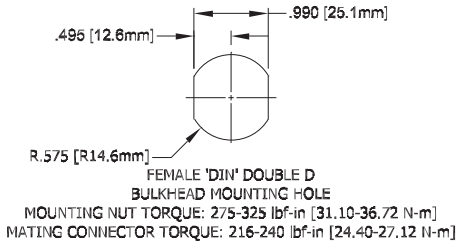
TYPICAL VOLTAGE LET THROUGH



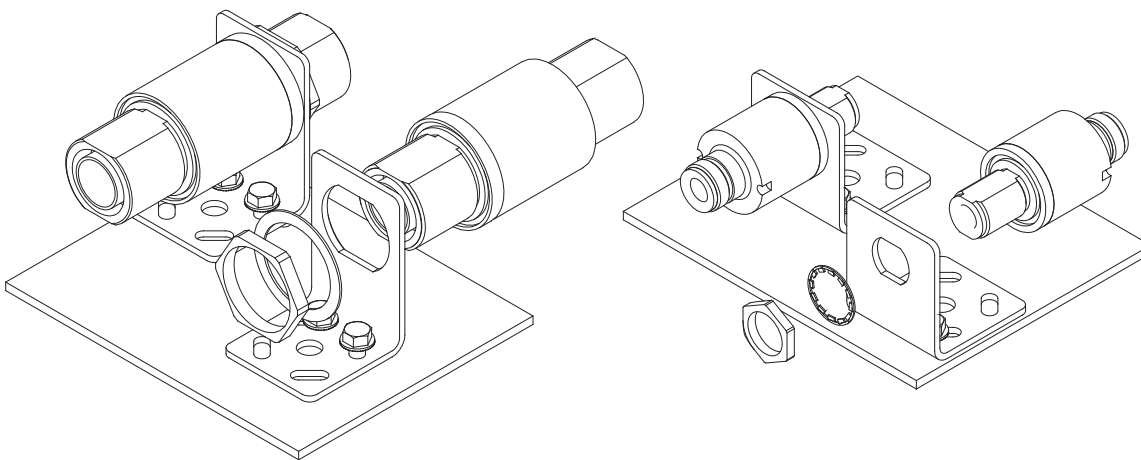
DETAILED SPECS

SX™ SERIES INSTALLATION

TYPICAL BULKHEAD MOUNTING



TYPICAL FLANGE MOUNTING



WARNING!

It is very important that this unit be grounded to a low impedance (low R and low L) ground system in order to work properly. We strongly recommend this ground be interconnected to the tower ground and power ground to form one system. To minimize "in-air" interconnect inductance to the ground system since skin effect is present, use as straight and large a surface area copper strap as possible. Keep bends in copper strap to an 8.0" [203.2mm] radius or larger.

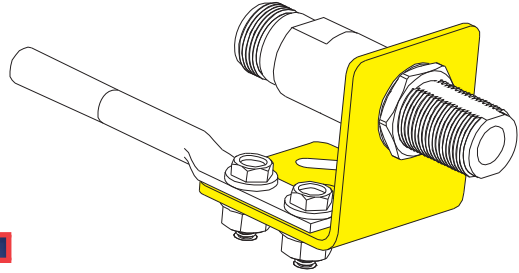
NOTE: BFD and BFN flange mounting options are sold separately. Hardware is not included with the bracket and must be purchased separately.

SX™ SERIES GROUNDING

THERE ARE THREE PREFERRED METHODS FOR GROUNDING THE SX PROTECTOR.

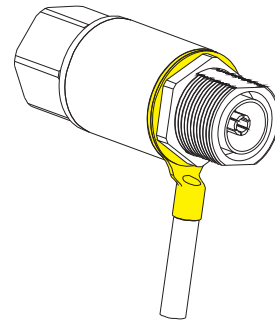
GROUNDING WITH BFD

The BFN or BFD bracket can be used with a 19mm or ¾ inch 2-hole lug as shown. The bracket allows for multiple grounding configurations. Hardware for grounding a lug, and the lug itself are not included with the bracket, or with the protection device and should be purchased separately.



GROUNDING WITH A TERMINAL LUG

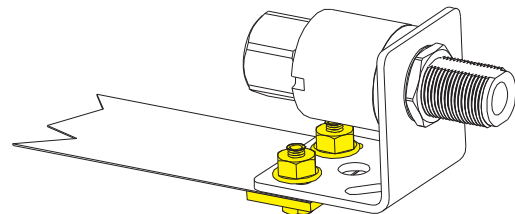
The SX™ device can be grounded using an N (Part # TLN) or Din (Part# TLD) terminal lug as shown. The bracket allows for multiple grounding configurations. Hardware for attaching a terminal lug as shown is included with the device.



GROUNDING WITH A COPPER STRAP

Using flat copper strap is the most effective way to drain surge energy to the ground plane. When used in conjunction with a single point grounding system, such as the PB and PEEP grounded entry panels, the copper strap is especially effective in considerably reducing, and in some cases eliminating surge currents to the equipment.

If you wish to use a 1-½" flat copper strap (Part# CS112-25) to ground the SX™ to a grounding plane it will be necessary to purchase the 9100-0413 hardware package for each end of the strap. This hardware package includes the nuts, bolts, and sandwich plate. This method is the preferred method for effective surge drainage.



IMPORTANT NOTE:

When grounding the SX™ to the PEEP grounding system a 6AWG grounding wire is acceptable if less than 12 inches. When not using a PEEP grounding system a Uni-Kit cable grounding kit must be used to effectively drain surge energy from the shield prior to the cable building entry point.

Also ask for our accessories and grounding catalog for:

- n Single Point Ground Entry Panels
- n Cable Shield Grounding Kits
- n Tower Mounting Kits
- n Weatherization Kits

DETAILED SPECS

DRAWING 1	<p>DSXL LSXL PSXL</p>
DRAWING 2	<p>LSXL-MA DSXL-MA PSXL-MA</p>
DRAWING 3	<p>DSXL-ME PSXL-ME LSXL-ME</p>
DRAWING 4	<p>USXL-D DSXL-D PSXL-D</p>
DRAWING 5	<p>USXL-D-MA DSXL-D-MA PSXL-D-MA</p>

DRAWING 6	<p>DSXL-D-ME PSXL-D-ME</p>
DRAWING 7	<p>DSXL-DN</p>
DRAWING 8	<p>DSXL-DN-MA</p>
DRAWING 9	<p>DSXL-DN-ME</p>
DRAWING 10	<p>DSXL-NS</p>

DETAILED SPECS

DRAWING 11	<p>DSXL-T-MA</p>
DRAWING 12	<p>DSXL-T-ME</p>
DRAWING 13	<p>DSXL-TS</p>
DRAWING 14	<p>AL-LSXM WSXM</p>
DRAWING 15	<p>AL-LSXM-MA</p>

DRAWING 16	<p>AL-LSXM-ME</p>
DRAWING 17	<p>AL-LSXM-NS</p>
DRAWING 18	<p>AL-LSXM-RT-ME</p>
DRAWING 19	<p>BFD</p>
DRAWING 20	<p>BFN</p>

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GX™ SERIES

The GX™ radio frequency DC-pass filter protectors are ideal for RF coaxial applications where DC is required. The GX™ can be used on GPS radios, and active tower mounted electronic equipment that operate in the range of 2 to 3,700 MHz. The GX™ is available in a multitude of connector configurations each exhibiting low return loss, insertion loss and let through voltage.

SPIKEGUARD™

SpikeGuard™ is leading a revolution in the straight gas tube protection market by bringing together a smaller profile, superior RF performance, competitive pricing and immediate availability through our vast partner network.

AIRSMART™

AirSmart™ is a multi-faceted product line that not only facilitates communication between non-AISG legacy tower mounted equipment and AISG compatible basestations; but acts as a bias-tee, lightning protector, in addition to providing monitoring functions through a high speed RS485 data interface.

DATA PROTECTION

Keep your high-speed data networks protected from lightning by using the NetGuard™ and the IX™ Series protectors. The NetGuard™ is a series of RJ45 plug-in protectors for indoor use; and the IX™ is a series of hard-wired protectors used primarily for outdoor applications. Both the NetGuard™ and the IX™ work on POE, T1, DSL, Ethernet, RS485 applications. The NXG is an RJ45 plug-in protector for indoor Gigabit Ethernet applications. For outdoor applications, use the GigaGuard™ high-speed data protector.



WHY IS A FILTER PROTECTOR YOUR BEST OPTION?

A filter protector is different from a gastube and a quarterwave protector in nearly every respect. Many of our competitors will tell you that a gastube or a quarterwave is almost as good as a filter; the truth is that they are not. We know. We have tested them. There are holes in our concrete to prove the damage they are capable of producing.

A gastube, when made correctly, is perfectly acceptable in some specific applications; however, they let a considerable amount of voltage through to the equipment because of the time it takes for the gastube to ionize. They also degrade over time and do not perform well under multi-stroke/strike conditions. Filter protectors do not use gastubes; instead a filter uses a fine-tuned LC circuit to short lightning to ground. The effect a filter has on lightning is staggering. It can take an 8x20us, 20kA pulse and turn it into a pulse of less than a volt, as seen by your equipment. How is that for protection?

How does that compare to a quarterwave's performance? Well, a quarterwave protector averages orders of magnitude more let-through energy than the filter does, has limited bandwidth, and doesn't come close to the RF characteristics, reliability, and value of the filter. When it comes to protection, nothing compares to the patented **SX™** filter in terms of customization, flexibility, and overall protection. The **SX™** is Simply eXceptional.



SX™ SERIES



- Industry's best RF performance
- Ultra wide bandwidth
- Multi-strike capable
- 10 year warranty

SX™
SERIES
**SIMPLY
EXCEPTIONAL**
Filter Protection




GLOBAL LIGHTNING SOLUTIONS

ISO 9001 & 14001 Certified



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